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Food Irradiation Is Already Here

Irradiation of food and agricultural products is currently allowed by about 40 countries. Approximately 60 commercial irradiation facilities are operating in the United States.

Many food scientists and technologists are unaware that the "food irradiation industry" is only a small part of a much larger industrial group dedicated to radiation processing. Every two years, the International Meeting on Radiation Processing (IMRP) convenes, and presentations are made on the radiation processing of materials, medical and pharmaceutical products, cosmetics, and vaccines, advances in irradiation technology and facilities, radiation dosimetry, and more.

The collection of papers presented at IMRP-2003, published in *Radiation Physics and Chemistry* (Vol. 21, No. 1-2, 2004), is 606 pages long. The papers cover irradiation of spices, nutraceuticals, seafood, meat and poultry, and fruits and vegetables for inactivation of bacterial pathogens and parasites and phytosanitary purposes.

In 1997, the Food and Drug Administration approved the use of ionizing radiation to inactivate pathogenic bacteria in red meat. While some scientists and public health officials are frustrated by the slow pace with which irradiated ground beef is penetrating the U.S. market, I question whether that frustration is warranted. Many food scientists forget that it took almost 50 years for pasteurized milk to be accepted by the public in the U.S.

At this year's IFT Annual Meeting + Food Expo®, Ron Eustice of the Minnesota Beef Council reminded us that processors such as CFC Logistics, Food Technology Services, and the Institute for Food Science and Engineering at Texas A&M University are still supplying irradiated meat and poultry to thousands of stores across the U.S., even after the demise of Surebeam Corp. In September 2004, Wegman's Food Markets, Inc., announced that *Huiskin BeSure™* irradiated beef patties are available at supermarkets in New York, New Jersey, and Pennsylvania. Thus, irradiated meat and poultry have not gone away.

Although introduced too late in the 2004 school year to allow orders to be placed, irradiated ground beef was made available, on a voluntary basis, as part of the National School Lunch Program administered by USDA's Agricultural Marketing Service and Food and Nutrition Service. Within the last year, the Child Nutrition Improvement and Integrity Act was amended to codify the procurement, labeling, and educational programs already developed by AMS and FNS for irradiated ground beef.

Most important, Congress mandated that "States and school food service authorities are provided model procedures for providing factual information on the science and evidence regarding irradiation technology. . . ."

The word "factual" is critical to the education process concerning irradiated foods. At USDA/ARS's Eastern Regional Research Center in Wyndmoor, Pa., we investigate an array of thermal and nonthermal intervention technologies to improve the microbiological safety and quality of foods; these include high-pressure processing, radiofrequency electric fields, competitive microbial exclusion, UHT pasteurization, and vacuum-steam-vacuum surface treatment. Unlike the private sector, we do not promote the use of specific technologies, such as irradiation, over others that would achieve the same objective. In other

words, we are objectively and comparatively evaluating the efficacies of a whole range of intervention technologies.

That being said, here are the facts surrounding irradiation of ground beef: (1) Irradiation can inactivate pathogenic bacteria occasionally found in ground beef such as *Escherichia coli* O157:H7, *Salmonella*, *Staphylococcus aureus*, and *Listeria monocytogenes*. (2) Irradiation of food, including ground beef, does not make food radioactive. (3) Irradiation, when used appropriately, does not change the aroma, taste, aftertaste, texture, or overall liking of ground beef, including frozen ground beef supplied as part of the National School Lunch Program. (4) There is no detectable increase in the risk of cancer associated with long-term consumption of radiation-pasteurized meat as determined by multi-species, multi-generation feeding studies conducted in animals. (5) Irradiated ground beef is nutritious and wholesome. And (6) irradiation is only effective as part of a comprehensive program designed to improve the microbiological safety of ground beef, not to "clean up" unacceptable product.

The Scientific Status Summary that appears in this issue of *Food Technology* is an in-depth analysis of the history, potential health benefits, and future of food irradiation. As scientists and technologists, we have a responsibility to ensure that educational materials provided to the public regarding food safety and processing technologies are based on sound science. The Scientific Status Summary meets the goal of providing factual information regarding food irradiation. ●

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